



Summer 2020
Vol. 23, No. 5

Theaters Are Reopening

As of mid-August, 87 giant-screen theaters in 15 countries have reopened following extended closures caused by the coronavirus pandemic. This represents about 41% of the worldwide inventory of 213 non-multiplex GS screens. Some 30 other institutions have opened their facilities but not yet reopened their GS theaters. The status of 19 other organizations with GS screens, mostly in Asia, could not be determined from their Web sites or other sources as this issue went to press in the last week of August.

This leaves 78 GS theaters (38%) — 66 institutional and 12 standalone — still closed, nearly nine months after closures began in China in January.

The U.S. leads in the number of GS theater reopenings, with 41, even as the numbers of confirmed new cases and deaths grow at higher rates than in most other developed countries.

All reopened theaters and their host institutions have implemented safety procedures that include limits on building and theater admissions, social distancing guidelines, face masks for staff and visitors (although they are not required by all venues), enhanced cleaning protocols, chang-

(see COVID on page 6)

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GSCA Virtual Conference

The Giant Screen Cinema Association will hold its annual conference online, Sept. 22-24, the same dates it had previously planned to meet in Chicago.

With the tagline “Imagine, Engage, Energize,” Virtual 2020 will include secure online screenings of new films, films in production, and films in development; a discussion on the state of the industry and the association; five professional development sessions; an innovations session; and two keynote speakers. There will be no awards ceremony.

All sessions will be recorded and available for playback after the conference at no charge to attendees and for purchase by members who did not register.

Times have been set aside each day for participants to connect in small groups in online meeting rooms, and each day will end with a “virtual happy hour,” because, as the association puts it, “we know important discussions happen at the ‘bar.’”

Film presentations

A total of 24 films will be presented, with the new films being made available for streaming in their entirety to registered participants via a secure server for one week on either side of the conference. The New Films are:

<i>Ancient Caves*</i>	Oceanic Research Group
<i>Antarctica**</i>	BBC Studios Natural History Unit
<i>The Arctic**</i>	Terra Mater Factual Studios GmbH
<i>Asteroid Hunters</i>	Imax Corporation
<i>Astronaut: Ocean to Orbit**</i>	Oceanic Research Group
<i>Dino Dana: The Movie</i>	Sinking Ship Entertainment
<i>Everest: The Director's Cut**</i>	MacGillivray Freeman
<i>Into America's Wild*</i>	MacGillivray Freeman
<i>Ireland**</i>	MacGillivray Freeman

* In release

** First time as New Film

(see GSCA on page 2)

50 Years Ago: First IMAX Film & Theater

by James Hyder

On March 15, 1970, *Expo 70* opened in Osaka, Japan, with the theme of “Progress and Harmony for Mankind.” By the time it closed, six months later, it had attracted over 64 million people, making it one of the best attended and most successful of the 39 world’s fairs or expositions that had preceded it since 1851. Highlights of the fair included demonstrations of new high-tech devices such as mobile phones and maglev trains, as well as a moon rock returned to earth by Apollo 12 less than six months earlier.

The expo also saw the premiere of a new form of motion pictures, invented by four men from Canada, and installed in the pavilion built by **Fuji Group**. The system would later be called IMAX and the four men were filmmakers **Graeme Ferguson** and **Roman Kroitor**, engineer **Bill Shaw**, and businessman **Robert Kerr**. The theater showed a free-form, impressionistic film called *Tiger Child*, produced by Kroitor and filmmaker **Kiichi Ichikawa** (producer of 1964’s *Woman of the Dunes*) and directed by **Donald Brittain** of the **National Film Board of Canada**.

The pavilion and theater bore little resemblance to what the world would later come to know as a standard IMAX theater: the building was a series of inflated fabric tubes bent over in a shape like a covered wagon to enclose a circular footprint. The audience stood on a slowly rotating, doughnut-shaped platform, while at one end of the space was a flat 44x62-foot (13.5x19-meter) screen on which the first 15/70 film was projected.

(see IMAX on page 3)

Founded 1997 as MaxImage

Summer 2020
Vol. 23, No. 5

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Published 8 times a year by
Cinergetics, LLC, and distributed
by first class mail.
Printed in the USA.

ISSN 1532-5504

Subscriptions: US\$397
Outside North America: US\$447
All payments must be made in
US funds.

Substantial discounts are
available for multiple subscrip-
tions to the same address.

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GSCA Virtual Conference Preview

(from GSCA on page 1)

Recorded seven-minute presentations on films in production and development will be provided by producers, using clips and/or slide presentations, much as if at a normal conference. This year's selection of Films in Production consists of:

No Time to Die	Metro-Goldwyn-Mayer
Refuge: America's Wildest Places*	Tandem Stills + Motion
The Search for Snow	Ouragan Films
Secrets of the Sea	Oceanic Res. Grp./Howard Hall Prod.
Tenet	Warner Bros.
Wings Over Water.....	Dorsey Pictures
Wonder Woman 1984.....	Warner Bros.
Yellowstone: Life in Extremes.....	Grizzly Creek Films

* First appearance at a GSCA conference

Films in Development:

Blue Dot Zero*	Moonraker VFX Ltd
Cephalopods: Aliens of the Deep*	St. Thomas Productions
Earth Coolers*.....	Before the Wire
How to Be an Orangutan	December Media
Jet Force Nine.....	Speedbird Productions
Koala	Amezdroz Media
Naica: Giant Crystal Cave*.....	Galafilm Inc.

* First appearance at a GSCA conference

Sessions

The conference will start off with a presentation by GSCA board chair **Alan Nursall** and **Blaze Cineworks' Paul Fraser** on the state of the GSCA and the GS industry, based on an extensive survey Fraser has conducted of members and recently lapsed members. It naturally focused on the effects of the pandemic, with questions probing how theaters managed their reopening process, and how producers will modify their ways of selling GS films to theaters, and the ways the GS industry overall needs to change.

Five professional development sessions will also look at how theaters and their host institutions can respond to the coronavirus and begin the process of returning to normal operations, with sessions on marketing, virtual programming, reopening best practices, and fundraising for film production in the post-COVID world.

The Innovations session will look at how aerial drones can be used for GS film production.

Two keynote speakers will address the conference. Marketing expert **Afdhel Aziz** will speak on the principle of "doing well by doing good" as outlined in his book *Good is the New Cool: Market Like You Give a Damn*. He is founder and Chief Purpose

Officer of **Conspiracy of Love**, a think tank with clients including Adidas, Facebook, Levis, Microsoft, and Mars.

Entrepreneur and author **Bob Cooney** will speak about how the most successful companies are handling the pandemic in a presentation entitled "Relaunch: How Companies Are Getting Back to Business."

Members can register for Virtual 2020 as individuals, although corporate registration (at four times the individual rate) allows an unlimited number of employees from that organization to participate. The GSCA was also offering scholarships to people facing economic hardship, but the deadline to request them passed before this issue went to press.

For more information, and to register, visit giant-screencinema.com.

Virtual 2020 Schedule

Tuesday, September 22

Time (EDT)	Session
11:00 am - 11:30 am	Interactive Kick-Off
11:30 am - 12:30 pm	The State of the GSCA and the GS Industry
12:30 pm - 1:30 pm	Learning Session 1: Audience Focus, Marketing and Data-Driven Action!
1:30 pm - 2:00 pm	Break
2:00 pm - 3:00 pm	Connections
3:00 pm - 4:00 pm	Learning Session 2: Engaging Audiences with Virtual Programming
4:00 pm - 4:30 pm	Virtual Happy Hour

Wednesday, September 23

Time (EDT) Sessions

11:00 am - 11:45 am	Innovations Session: Why, How, and When to Use Drones for Aerials
11:45 am - 12:30 pm	Keynote Speaker: Afdhel Aziz "Good is the New Cool: Market Like You Give a Damn"
12:30 pm - 1:30 pm	Roundtable Discussions
1:30 pm - 2:00 pm	Break
2:00 pm - 3:00 pm	Films in Production & Projects in Development
3:00 pm - 3:30 pm	Connections
3:30 pm - 4:30 pm	Learning Session 3: Reopening: Best Practices and Innovations
4:30 pm - 5:00 pm	Virtual Happy Hour

Thursday, September 24

Time (EDT) Session

11:00 am - 12:00 pm	Learning Session 4: New Models for the New Normal
12:00 pm - 12:30 pm	Interactive Breather
12:30 pm - 1:30 pm	Keynote Speaker: Bob Cooney "Relaunch—How Companies Are Getting Back to Business"
1:30 pm - 2:00 pm	Break
2:00 pm - 3:00 pm	Connections
3:00 pm - 4:00 pm	Learning Session 5: Energize Your Marketing Efforts: What You Can Do Now!
4:00 pm - 4:30 pm	Virtual Happy Hour

There will be short breaks between each session. The schedule is subject to change.

50th Anniversary of First IMAX Film and Theater

(from **IMAX** on page 1)

Because each member of the audience entered and exited the rotating platform at a different point in the movie, *Tiger Child* lacked a conventional narrative structure with a beginning, middle, and end. It was shown continuously, with the brief breaks for rethreading covered by a slide show projected on the walls of the theater.

Only a relatively small portion of the 16-minute film was full-frame footage captured with the first 15/65 camera, which had been built for the team by Norwegian engineer **Jan Jacobsen**. Most of it was captured on smaller formats — 35mm and 5/70mm — that appeared as panels in the 15/70 frame. The reason for this was at the heart of the invention of the IMAX system and the creation of a whole new cinema experience.

Expo 67

Three years earlier, Montreal had hosted a previous world's fair, **Expo 67**, with the theme of "Man and His World." The expo featured a number of notable and innovative film presentations, including *Polar Life* and *Labyrinth*. Made by Ferguson and Kroitor respectively, both used multiple film projectors to create dynamic,

multi-image experiences. The two men were obsessed by the superior creative possibilities offered by multi-image presentations as compared to conventional films. Inspired by **To Be Alive**, **Francis Thompson** and **Alexander Hammid**'s Oscar-winning three-screen presentation at the 1964–65 World's Fair in New York, Ferguson and Kroitor advanced the art form to new heights in Montreal. (The influence of *To Be Alive* and Expo 67's multi-screen films can be seen in several Hollywood films of the period, including *The Thomas Crown Affair* and *The Boston Strangler*.)

The systems Ferguson and Kroitor built for their theaters used cutting-edge technology of the day to keep the various projectors and sound elements perfectly in sync, but the occasional breakdowns and sync problems were troublesome, as were the difficulties of getting the colors on different film prints to match up.

Frustration with these technical difficulties led Ferguson and Kroitor, who had known each other since their college days, to conceive a single simple projector that could be used to present multi-image shows in perfect sync and with high reliability. One night in the summer of 1967, over drinks before dinner at Kroitor's

house (Kroitor had married Ferguson's sister, Janet), the two sketched out the basics of the system they first called "Multivision."

As Ferguson told *LF Examiner* in a 2002 interview, "The first discussion was certainly under an hour, maybe about half an hour. We knew that the right way to do it was to take a 70mm print, run it sideways, and instead of being five perfs, it was going to be around 15 or 16 perfs."

He added, "The basic idea was to take Roman's third chamber in *Labyrinth*, which had five 35mm screens in the shape of a cross, add in the other four [in the corners], so now you had a large screen that would look as if it was projected with nine 35mm projectors, three up and three across."

In September, before Expo 67 had ended, Ferguson and Kroitor tapped Kerr to handle the business aspects of the newly formed company they called Multiscreen Corporation. Each of the three put in CDN\$700 to start the new business.

Gearing up for Expo 70

On the strength of the success of *Labyrinth*, Kroitor was approached by Japan's Fuji Group to create a new film experience for the coming Osaka Expo. This meant building the revolutionary new projector they had conceived. Ferguson recalled, "We had two filmmakers, which was one too many, one businessman, which was right, and we were one short in the engineering department. We said to each other, 'Who's the best engineer we could hire,' and it took us about one tenth of a second to say 'Bill Shaw.'"

A schoolmate of the pair, Shaw was designing ice hockey helmets and other products for Canadian sports equipment maker CCM, but had no experience in motion pictures and had never even set foot in a projection booth. Nevertheless, he joined his school chums in their new venture, and set to work building a machine to project the world's largest film frame on a giant screen. The biggest technical challenge to overcome was the film



The Fuji Pavilion at Expo 70 in Osaka, Japan, housed the first IMAX theater.

(see **IMAX** on page 14)

THE BIZ

NEWS

McWane installing IMAX laser

The IMAX Dome theater at the **McWane Science Center** in Birmingham, AL, opened on July 7 after a four-month closure, but then closed again on Aug. 8 so its 22-year-old 15/70 film projector could be replaced by an IMAX Laser Dome system.

In addition to a new IMAX six-channel sound system, the renovation will include cleaning the 72-foot (23-meter) dome screen, replacing the chairs and carpet, and installing new LED lighting. The theater is expected to reopen in late November.

McWane will be the sixth theater to get the single-projector 4K laser system. The **Museum of Science Boston** is also in the process of converting, delayed several months by the pandemic, and is expected to reopen before November, although no date has been announced.

The IMAX dome system uses a single laser projector mounted in the center “doghouse” position where the 15/70 film projector was formerly placed. A vertical anamorphic stretch extends the native 1.9:1 aspect ratio of the DLP imaging chips to 1.43 to cover most of the dome.

max posts \$40M loss in Q2

In late July, **Imax Corporation** posted its financial results for the second quarter ending June 30, 2020. For the quarter the company reported a loss of \$40.3 million (\$0.44 per share) on revenues of \$8.9 million, compared to a profit of \$24.0 million (\$0.19 per share) on revenues of \$19.7 million in the second quarter of 2019. For the first six months of 2020, the company lost \$83.7 million (\$1.26 per share) on revenues of \$43.8 million, compared to a

profit of \$35.5 million (\$0.32 per share) on revenues of \$185.0 million in the first half of 2019.

The losses were obviously the result of the near-total shutdown of IMAX theaters globally for much of the year to date because of the coronavirus (*see article on page 1*). However, because it holds substantial cash reserves, the company says it can weather several zero-revenue quarters, and analysts and the market generally

pandemic as other companies in the entertainment world. These include the fact that studios are rescheduling, not eliminating, their major releases, and that several of the major tentpoles set to open later this year, or in early 2021, were shot with IMAX film cameras, including **Christopher Nolan's** *Tenet*, *Wonder Woman 1984* from **Warner Bros.**, and *No Time to Die*, the next James Bond release.

Although the pandemic and other trends have boosted the popularity of online streaming services, Gelfond said that only “lower and mid-tier movies,” will get video-only releases, not the blockbusters that usually play on IMAX screens. Regarding reports that some studios intend to shorten theatrical release windows, he said this, too, “will have little bearing on Imax, as most of our films play only for one week or two weeks...at

the most.” Similarly, he feels that permanent closures of some theaters in North America or China are “unlikely to impact Imax, given that we generally operate almost exclusively among top-performing theaters.”

Imax's theater and film deals

In June and July, **Imax Corporation** announced three new theater deals and an agreement to stream some of its original documentaries on **Hulu**.

Wanda Film Co. Ltd., the largest cinema chain in the world, made a 20-system deal that will upgrade ten existing theaters to IMAX laser and add ten new screens, bringing Wanda’s IMAX count in China to 378 open or contracted.

South Korea’s **CJ CGV Co. Ltd.** will add 17 IMAX screens, bringing its total to



The McWane Science Center in Birmingham, AL, is installing the IMAX dome laser system.

seem to agree. Imax shares started the year around \$20, fell to between \$18 and \$15 in February and March, before plummeting to an 11-year low of \$7.16 on March 17, the start of theater closures in North America. Although the price recovered almost immediately and began a steady climb, reaching \$14.02 in early June, even this peak is below its lowest point of the past ten years. Shares remained between \$10.55 and \$14.16 through July and the middle of August.

Also in July, subsidiary **IMAX China** reported that it expected to report a loss for the first six months of 2020 between \$34 million and \$36 million.

In a conference call with analysts, CEO **Richard Gelfond** highlighted the company’s strengths and the reasons he believes Imax will not be as badly affected by the

THE BIZ

NEWS

185 (including backlog) in South Korea, China, Indonesia, Myanmar, Turkey, and the U.S. According to a press release "several" of the 17 will be IMAX laser systems.

Universal Beijing Resort, currently under construction, will feature the first IMAX theater in a Chinese theme park when it opens in 2021. The laser-equipped theater will be located in the park's City-Walk attraction, which, like its counterparts in other Universal Studios parks, includes dining, retail, and other entertainment options.

The deal with streaming platform Hulu rolls out "at least" 16 giant-screen documentaries over the next few months, according to a press release. Titles released in June or July were:

A Beautiful Planet (2016)
China: The Panda Adventure (2001)
Destiny in Space (1994)
The Dream is Alive (1985)
Fires of Kuwait (1992)
Galapagos (1999)
Hail Columbia! (1982)
Horses: The Story of Equus (2002)
Into the Deep (1994)
Journey to the South Pacific (2013)
Pandas (2018)

The Secret of Life on Earth (1996)
Space Station (2002)
Survival Island (1995)
T-Rex: Back to the Cretaceous (1998)

Set for release later in 2020 is *Super-power Dogs* (2019) from **Cosmic Picture**.

The films will be not be streamable in 4K resolution, even though Hulu offers some 4K content, and Imax's announcement said that "many" of the titles had been digitally remastered. No mention was made of how long the films will be available on the service.

K2 makes TV deal with MGM

K2 Studios has made a deal with **MGM Television** to produce eight documentary television series as part of MGM's previously announced plan to move into "factual" programming. The deal also in-

cludes television distribution of K2's existing giant-screen content. K2 president **Mark Kresser** will continue to supervise production and distribution of giant-screen content and will serve as executive producer of the new TV series, working with Australia-based **Definition Studios**. **Ryan Kresser** will be head of the expanded K2 television division, and K2 founder **Bob Kresser** will continue to focus on GS film development.

Rumor: Barco taking over Imax?

In mid-June, StreetInsider.com cited an unnamed source as claiming that Belgian projector maker **Barco N.V.** is considering "a potential takeover bid" for **Imax Corporation**. Imax partners with Barco to manufacture IMAX-branded digital xenon and laser projectors. The report said that "Barco is said to have hired investment bankers and other professionals to assist in the matter. While Barco is exploring a bid, there is no certainty they will proceed with such a move, the source cautioned."

Although several other news sources repeated StreetInsider.com's claim, neither Imax nor Barco would comment, and *LFX* has been unable to confirm any aspect of the report.

Vancouver gets new CEO

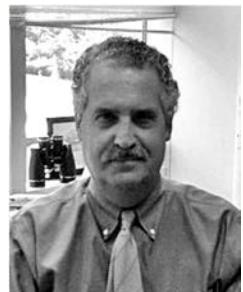
Science World in Vancouver, BC, Canada, has announced that **Tracy Redies** will be the center's new CEO, effective Sept. 14. She will replace interim CEO **Janet Wood**, who has headed the organization since the departure of former CEO **Scott Samson** in the fall of 2019.

Redies has served as a member of British Columbia's Legislative Assembly since 2017. Before that she spent 25 years in the banking industry, most recently as president and CEO of a credit union.

PERSONNEL

Gary Monti retires

Gary Monti, director of museum and theater operations at the **Cradle of Aviation Museum**



Gary Monti

in Garden City, NY, tells *LFX* that he retired on June 16 after a museum career of 39 years. From the perspective of retirement, he realizes, "I have always had an abiding interest in museums, films, aircraft, and baseball [and] I was fortunate to have pursued all of these interests professionally. In other words, I was paid to do what I love. A true joy was my participation in the large-format film industry. I would be remiss not to mention some of those I came to think of as my friends: **Toby Mensforth**, **Derek Threinen**, **Gina Glen**, **Mark Katz**, **Mark Kresser**, **Don Kempf**, **Daniel Ferguson** (aka Roy Giegerstein), **Antonietta Monteleone**, **James Hyder**, **John Wickstrom**, **Pietro Serapiglia**, **Amber Hawkins**, and my buddies **Mary Jane Dodge** and **Mike Lutz**. I will miss you all."

A call from Graeme

The editor of *LF Examiner* was pleased to get a call from **Imax Corporation** co-founder **Graeme Ferguson** in mid-August. The veteran filmmaker discussed the book he has nearly finished writing about a 19th-century inventor, and related a few other details about his retirement and life at age 90. He turns 91 on Oct. 7.

He mentioned that he has completed radiation treatments for cancer that was detected earlier in the year, and assured us that the disease was found quite early and that he is feeling fine. He expects to have a prognosis later this year.

Ferguson says he's looking forward to attending the **GSCA**'s virtual conference, although when we said we were looking forward to seeing him there, he admitted that he doesn't own a webcam.

More than 40% of GS Theaters Have Reopened



Clark Planetarium in Salt Lake City, UT.

(from **COVID** on page 1)

es to traffic flow, and other measures.

On the production side, most GS films have halted any active shooting that had been under way or planned, although a handful of projects have managed to do limited shooting in remote locations, while exercising increased precautions. Projects that had completed principal photography have found new ways to do post-production work remotely, with the added benefit of less time pressure, since most 2020 release dates have been thrown out the window.

Meanwhile, multiplex theaters have also begun reopening, with 663 out of 1,414 worldwide locations with IMAX theaters (47%) open as of mid-August, the majority of which (at least 386) are in China. Canada, Japan, Russia, and the U.K. have opened about 35 IMAX screens each, with France, South Korea, and the U.S. opening about 15 each. (Note that our data do not include all multiplex theaters in a given country, only those that have IMAX theaters.)

And Hollywood studios are preparing to resume new releases, with **Christopher Nolan's** *Tenet* as the trailblazer. Originally expected to open in July, *Tenet* will be

released in most of the world on Aug. 26 or 27, in the U.S. and Russia on Sept. 3, and in China a day after that, Sept. 4. (See also the item in *Shorts* on page 20.) Other major blockbusters, such as *Wonder Woman 1984*, the next James Bond episode, *No Time to Die*, and *Top Gun: Maverick*, have also been pushed back from their original dates.

Institutional theaters' experience

By and large, most theaters that have reopened are following the procedures mentioned above to maximize the health and safety of their staffs and visitors. Other steps include reducing the number of shows per day to allow time for cleaning seats, simplifying or suspending concession sales, and eliminating 3D shows, or switching to single-use glasses, to reduce concerns about cleaning and handling 3D glasses.

There are variations in the percentage of seats being sold (in some cases as mandated by local authorities) but most cluster around 25%. So far, few theaters are selling even these low numbers, and many managers, like **Darren Durocher** at **Telus World of Science Edmonton**, tell *LF Examiner* they are happy to have achieved as

much as 74% of the reduced capacity. However, he adds, this is "only about 20% of our 2019 July attendance."

At the **Clark Planetarium**, a 70-foot (21-meter) IMAX Dome in Salt Lake City, UT, where capacity has been reduced from 288 to 45, **Richard Cox** says his weekend shows are selling out, although "weekday shows are 33% occupancy at best."

Most theaters are blocking off every other row of seats, and some further enforce social distancing by having ushers seat each party.

Steve Fentress, director of the Strasenburgh Planetarium at the **Rochester Museum and Science Center**, a 65-foot (20-meter) fulldome in New York, tells *LFX* that "as part of our recent renovation, we removed all permanent seats, using movable chairs on an open flat floor. That made it possible to arrange seats six feet apart and establish a seating capacity of 26," one-fifth of the previous capacity of 130. "After the first two or three weeks, we have been selling out our small capacity for most performances."

Furloughs and layoffs

With nearly no income for most of the year, museums have had to look at all options for new revenues on the one hand, and reducing expenditures on the other. Zoos, aquariums, and other organizations with living collections cannot simply turn off the lights and lock their doors. Most GS institutions (including the **Giant Screen Cinema Association**) have been able to take advantage of various emergency government programs to assist with salaries and other expenses.

Virtually all have increased fundraising appeals via their Web sites and other social media. A notable success story is the **U.S. Space and Rocket Center** in Huntsville, AL, home to the popular Space Camp, as well as a 67-foot (20.4-meter) **Evans & Sutherland** fulldome, and a 52-foot (16-meter) digital 3D theater. The center told fans in late July that it might have to close if it couldn't raise \$1.5 million. Its GoFundMe campaign raised that

amount in a week, thanks in large part to a \$500,000 donation from **Boeing** and \$250,000 from **SAIC**. But in addition to those gifts, over 8,000 people and corporations from all 50 states and 36 countries made donations that exceeded the goal by more than \$85,000.

According to survey of 760 museums by the **American Alliance of Museums** released in June, 58% said they had not furloughed or laid off any staff, 26% had furloughed part-time workers, 16% had laid off part-timers, 15% had furloughed full-time staff, and 11% had laid off full-time employees.

Among the dozen or so theaters that responded to *LFX*, most had laid off, furloughed, or reduced the salaries of some portion of their staffs. However, those that have reopened say they have brought back the affected employees.

We know of at least half a dozen GS theater managers who have been permanently laid off, with another two or three who opted for early retirement. On the

other hand, one manager who had planned to retire in the fall has agreed to stay on for a few extra months to help with reopening plans.

The fate of institutions

Apart from the effects on individual museum employees, the pandemic has had a serious impact on many institutions. According to the AAM survey, roughly one-third expect to lose up to 20% of their income in 2020, another third could lose up to 40%, and more than one-fifth believe they could lose as much as 60%. Eleven percent say they might lose between 60% and 100% of their income this year. As a result, 16% of respondents said there is a "significant risk of...closing permanently in the next 16 months," and another 17% said they weren't sure that their organizations would survive.

However, the giant-screen world may not be quite as hard hit as these numbers would suggest. Museums with GS theaters are typically among the largest and most financially viable institutions, whereas the majority of AAM members are art or history museums that are, on average, much smaller. The kinds of facilities that typically host GS theaters — science centers, zoos, and aquariums — make up less than 10% of AAM's membership. So, grim as they are, the averages reported in the survey are not necessarily representative of GS institutions.

Nevertheless, many freelance museum professionals and consultants could be hit hard. According to a survey by the **International Council of Museums**, 56.4% of freelancers said they would have to suspend their own

salaries this year, 39.4% said they were downsizing their companies, and 55.4% said the future of their firm is at risk.

The biggest player in the GS world, **Imax Corporation**, has reported a loss of \$83.7 million in the first half of 2020, but its substantial cash reserves are expected to permit it to weather the downturn. (See item in *The Biz* on page 5.)

Production

As noted in our report on the GS Films of 2020 in the Jan.-Feb. issue, 16 titles were expected to open this year, four of which premiered before the large-scale theater closures began in March.

Dinosaurs of Antarctica (2/14)Giant Screen Films
Into America's Wild (2/14).....MacGillivray Freeman Films
Sea Lions: Life by a Whisker (2/15).....Definition Films
Ancient Caves (3/7)Oceanic Research Group

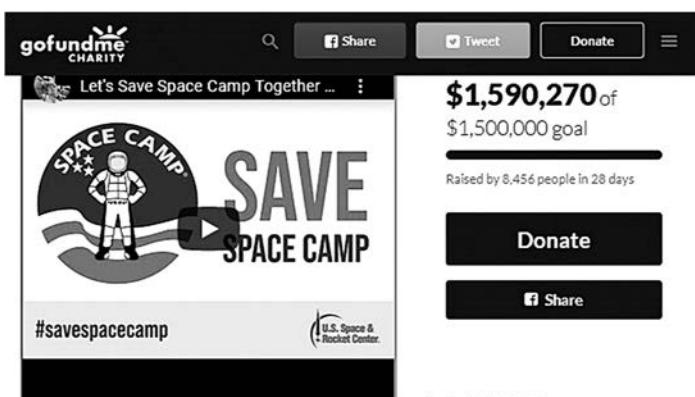
At this writing, only five others have been confirmed by their producers as opening in 2020.

Astronaut: Ocean to Orbit (fall).Oceanic Research Group
Asteroid Hunters (10/8).....Imax Corporation
Train Time (Nov.)Stephen Low Company
Antarctica (late 2020)... BBC Studios Natural History Unit
The Search for Snow (late 2020).....Ouragan Films

Others have been pushed into 2021 or put on hold until their producers and distributors can gain a clearer picture of the landscape.

The producers of the four titles that opened in the first quarter have obviously not achieved the bookings or revenues they expected, and some have had to adjust their future release schedules to avoid competing with themselves. For instance, director **Jonathan Bird**'s *Ancient Caves* ran for only a handful of days in two theaters in mid-March. He tells *LFX* that although he has nearly completed *Secrets of the Sea* with **Howard** and **Michele Hall**, they and distributor MacGillivray Freeman Films will probably hold it until 2022 to give *Ancient Caves* time to find its audience. In the meantime, Bird has almost finished a 20-minute GS short, *Astronaut: Ocean to Orbit*, which he hopes to open this fall, if he can get a few more shots. A fine cut of that film will be shown at the GSCA's virtual conference in September.

(see *COVID* on page 8)



The screenshot shows a GoFundMe campaign page for 'Save Space Camp'. The title is 'Let's Save Space Camp Together ...'. It features a video thumbnail with a 'Space Camp' logo and a play button. Below the video is the text '#savespacecamp' and the U.S. Space & Rocket Center logo. The campaign goal is '\$1,590,270' of '\$1,500,000 goal', raised by 8,456 people in 28 days. There are 'Donate' and 'Share' buttons. The page was created on July 28, 2020.

Save Space Camp

On July 28, 2020, the U.S. Space & Rocket Center launched a campaign to Save Space Camp to help the Rocket Center and Space Camp survive the devastating economic results of the COVID-19 crisis. We have already borrowed our limit with the bank and structured plans to lay off 90 percent of our valued employees - our family. We watched in awe as more than 8,000 people and corporations from all 50 states and 36 countries answered our distress call, helping us raise more than \$1.5 million in one week's time. We are deeply grateful.

Please help us rebuild this valuable institution on

Story **Updates (3)**

Recent Donations

SS	Save space amp.com	\$10
3 hours ago		

SW	Steven W Jochums	\$100
4 hours ago	on behalf of Lake County Space Port.com	

(from **COVID** on page 7)

Film production during the pandemic is complicated by travel restrictions, local health and safety regulations, and the need to protect crew and talent while shooting. Although the rules may be easier for the relatively small crews of GS films to observe than for producers of feature films, they can increase costs significantly, perhaps as much as 20%.

That estimate comes from **Cosmic Picture's** **Daniel Ferguson**, who had been planning to begin shooting this year for **New England and the Sea of Stories**, the new signature film for the **Museum of Science Boston**. After speaking with the producers of commercials, TV series, and larger-budget documentaries, he learned that

"...working days for union shows are down from 10 hours to 8.5 (due to new arrival, departure, sanitizing and meal protocols). Productions have to provide for COVID coordinators and nurses on set, and test anyone on cast insurance, and certainly any key talent, regularly. In the case of one production I know

of, there was a positive test, which ended up shutting down the show for several days and resulting in daily tests for every crew member and additional precautions, to the tune of tens of thousands."

Although some of these factors wouldn't apply to most GS shoots, he mentioned another potentially significant concern: "There is currently no underwriter who is willing to insure any production for COVID-19 incidents." He concludes, "Frankly, it's a mess for larger-scale docs with continuous block shooting." Because the *New England* film will include crowds and large crews, he and his team have decided to delay filming until 2021.

Despite the challenges, a few GS producers have actually been able to get some shooting done during the pandemic. **Alexandre Milazzo** of **nWave Pictures** tells us that one of their cameramen, filming in the French Alps for *The Search for Snow*, was stopped by police. But because he was on his own, he allowed him to continue, their greatest concern being that he might require a helicopter rescue if he was injured. (He wasn't, and got some additional footage.)

Tom Winston says that although **Grizzly Creek Films'** planned spring shoot in Yellowstone National Park for *Yellowstone: Life in Extremes* was canceled when the park was closed, his team was able to capture some unprecedented aerials showing the park completely devoid of humans. He notes, "We documented a truly historical moment in time over the world's first national park."

Although loca-

tion shooting has mostly ceased, for the most part, post-production has not been affected nearly as much. Jonathan Bird has been working on the 3D conversion of *Ancient Caves* during the shut-down, and reports that he is thrilled with the results. "As you know, we shot the film with domes specifically in mind. But the 3D version is so good, that at this point I'm not sure which version is better! Our 3D supervisor **Rick Gordon** and the gang at **Legend 3D Inc.** knocked it out of the park."

Other producers have had to develop new workflows and procedures to get their post work done in the post-COVID world. For one case study, see the story by **Myles Connolly** in the box on page 12.

A few distributors have also launched programs to reach out directly to viewers. In addition to the GS films available for streaming, as mentioned in our previous reports, **BIG & Digital** is offering virtual field trips, which combine GS documentaries from the firm's library with hands-on activities that students can do at school or at home. Principal **Tina Ratterman** expanded the Cinema Learning Challenge, developed in 2017 with Clark County, NV, to an online program available to schools and families, starting in August.

Sinking Ship Entertainment, producer and distributor of *Dino Dana: The Movie*, has created new online content "to keep audiences engaged during these challenging times," until the film returns to theaters next year. The new material includes a new Dino Dana podcast and an "Ask a Paleontologist" video series.

Hollywood and multiplexes

Five Hollywood features premiered in IMAX theaters in January and February, and three more received a handful of screenings in March before theaters closed: **Disney/Pixar's** *Onward* (3/6), *I Still Believe* (3/13) from **Lionsgate**, and **Sony's** *Bloodshot* (3/13). Twelve more DMR titles had been scheduled for the remainder of 2020, but only eight still appear on Imax's list of coming attractions. *Mulan* will be released directly to streaming, and *Black Widow*, *The King's Man*, and *Dune* also may not get IMAX



Daniel Ferguson



Filming for Ouragon Films' The Search for Snow.

runs. *Beastie Boys Story* is listed at Imax.com, but without a release date.

The first post-COVID film to run in U.S. IMAX theaters will be *20th Century* and *Marvel's The New Mutants*, which will test the waters in the week before *Tenet* opens on Sept. 3. (See item on *Tenet* in *The Biz* on page 5.) The rest of the IMAX slate has been shifted and shuffled from its original order. *Tenet* was delayed from its original July 17 date; following it will be *Wonder Woman 1984* on Oct. 2, moved from June 5; *No Time to Die*, first set for April 10, will now open on Nov. 25; and *Top Gun: Maverick* has moved from June 26 to Dec. 23. *F9 Fast and Furious*, originally expected on May 22, has been pushed back to April 2, 2021, the date that *F&F* episode 10 was to have opened.

In the U.S., each state has different rules and restrictions on when and how multiplexes can reopen. At press time, six states — California, Maryland, New Jersey, New Mexico, New York, and North Carolina — had not announced opening dates, and several others were only allowing those in certain counties to open. In the majority of states that are permitting theaters to open, capacities are limited to between 25% and 66%, or to fixed totals such as 50 people. A few states have no set limits, but only require six-foot separation between patrons.

Similarly, guidelines regarding masks vary from state to state, with most not requiring them for theater guests who are socially distanced inside an auditorium. However, **Cinemark** requires masks be worn except while eating or drinking, but it's not clear how rigorously that rule will be enforced.

The way forward

As this issue was being prepared, at least two colleagues with GS projects in the works approached *LF Examiner* to ask for advice on what the future of the business looked like. We had to admit that with all the uncertainty surrounding virtually every aspect of life

these days, we wouldn't dare to offer predictions of any kind. We have been able to gather the facts presented in this article and our previous reports, but how soon theaters will open, when audiences will feel comfortable returning

to them, when capacity restrictions will be lifted, when the world will be back to normal, and myriads more, are questions we certainly can't answer and don't believe anyone can.

There will be more pain, struggle, and uncertainty for most of the GS industry — as there will be for most of the world — for months and possibly even years to come. The GS business had been facing serious challenges before COVID-19 appeared. Our ranks as individuals have shrunk because of layoffs and retirements; it is possible that some of our institutional members could shut their doors, or not reopen their theaters, although we hasten to add that we know of no such imminent threats. But the number of GS theaters has been steadily shrinking for years, and that trend is unlikely to change in the post-COVID world.

However, the giant-screen experience is still compelling and unique, and for fifty years the people of the GS world have shown themselves to be creative, determined, and resilient. The various responses to the pandemic from museums, theaters, producers, and distributors documented in our past several issues have clearly demonstrated those strengths. And the GSCA has tackled the challenge and planned a virtual conference with sessions designed to help members weather the pandemic and thrive.

The fate of the GS business is in our hands.



Wonder Woman 1984 stars Gal Gadot



* New listing.

All films are 3D unless noted; underlined titles are 2D.

Updated information is printed in **bold**.

Unless noted, all films run about 40 minutes.

Asteroid Hunters (formerly Asteroid Impact)

Imax Corporation, Huahuang Pictures; distributor: Imax Corporation; director: W.D. Hogan; producers: Jini Durr, Phil Groves; DP: Sean MacLeod Phillips; script: Phil Groves; executive producers: Anna Chi, Phil Groves. Cast: Marina Brozovic, Mark B. Brosough, Kelly Fast, Nahum Melamed. **Release: Oct. 8.**

- The film will be screened at the GSCA's virtual conference in September.

Astronaut: Ocean to Orbit

Oceanic Research Group; distributor: MacGillivray Freeman Films; director: Jonathan Bird; producer: Art Cohen; DP: Jonathan Bird; script: Jonathan Bird, Art Cohen; score: Bruce Zimmerman; executive producers: Christine Bird, Greg Von Hausch. Cast: Astronauts Chris Cassidy, Jeanette Epps. Running time: 20 minutes. **Release: Fall 2020.**

95% of principal photography has been completed.

- September: Will complete remaining photography.
- A fine cut will be screened at the GSCA's virtual conference in September.

Train Time

Stephen Low Company; distributor: Stephen Low Company; director, script: Stephen Low; producers: Pietro Serapiglia, Stephen Low; executive producer: Paul Globus. **2D. Release: November.**

- Film is complete.

Antarctica: Into the Unknown

BBC Studios Natural History Unit; distributor: SK Films; director: Fredi Devas; producers: Jonny Keeling, Myles Connolly; script: Fredi Devas, Jonny Keeling; score: Jacob Shea; executive producer: Jonathan Williams. **Release: late 2020.**

- The film will be screened at the GSCA's virtual conference in September.

Angkor: Lost Empire of Cambodia (wt)

Definition Films, Helio Projects Asia; distributor: K2 Studios; director: Murray Pope; producers: Christopher Zaryc, David Gross, Murray Pope; DP: Earle Dresner; script: Murray Pope, Paul Phelan; executive producers: Ed Capelle, Mark Kresser, Nick Robinson, Kulikar Sotho, John Weiley. **Release: 2020.**

Mars 1001

Mirage 3D; distributor: K2 Studios; director, writer: Robin Sip; DP: Christiaan Wouda; score: Mark Slater. Cast: Miles O'Brien. **Release: 2020.**

Jul '20

Tenet

AstHun

AOTO

TrainT

OceaC

Snow

Tiger

Jan '21

EverDC

Ireland

Sereng

Arctic

DinoD

Ocean Currents (wt)

Wild Pacific Media, Definition Films; distributor: K2 Studios; director: Nick Robinson; producers: Nick Robinson, Electra Manikakis, Peta Ayers; DPs: Nick Robinson, Jonathan Shaw ACS, Caspar Mazzotti; script: Nick Robinson, Peta Ayers; score: Hylton Mowday; executive producers: David Gross, Electra Manikakis, Nick Robinson. Cast: Silvia Earl. **Release: 2020.**

The Search for Snow (formerly Snow)

Ouragan Films; distributor: nWave Pictures Distribution; directors: Jacqueline Farmer, Cyril Barbançon; producers: Jacqueline Farmer, Cyril Barbançon, Eric Dillens; DP: Cyril Barbançon; script: Jacqueline Farmer, Cyril Barbançon, Philippe Chappuis, Andy Byatt; executive producers: Jacqueline Farmer, Cyril Barbançon, Eric Dillens. **Release: 2020.**

- Principal photography is complete, post-production is under way.

Tiger, Tiger

White Mountain Films, Kennedy/Marshall Company, Imax Corporation; distributor: Imax Corporation; director: George Butler; producers: George Butler, Keero Birla, Caroline Alexander; DPs: Reed Smoot, Tom Hurwitz; script: Caroline Alexander; score: Mark Kilian; executive producers: Julian Robertson, Frank Marshall. Cast: Dr. Alan Rabinowitz. **2D. Release: 2020.**

- Principal photography is complete, post-production is under way.

Everest: The Director's Cut

MacGillivray Freeman Films; distributor: MacGillivray Freeman Films; directors: Greg MacGillivray, David Breashears, Steve Judson; producers: Steve Judson, Alec Lormore, Greg MacGillivray; DP: David Breashears; script: Tim Cahill, Steve Judson; score: Daniel May, Steve Wood. Narrator: Liam Neeson. Cast: Araceli Segara, Jamling Tenzing Norgay, Ed Viesturs. **2D. Release: February 2021.**

- The original 15/65 footage is being scanned at 16K resolution.
- New material will be added.
- The film will be released in 8K resolution.
- The film will be screened at the GSCA's virtual conference in September.

Ireland

MacGillivray Freeman Films; distributor: MacGillivray Freeman Films; director: Greg MacGillivray; producer: Shaun MacGillivray; DPs: Brad Ohlund, Greg MacGillivray; Script: Greg MacGillivray, Machán Magan. **Release: February 2021.**

Principal photography is complete, post-production is under way.

- A rough cut will be screened at the GSCA's virtual conference in September.

Serengeti

K2 Studios; distributor: K2 Studios; director: Michael Dalton-Smith; producers: Michael Dalton-Smith, David Gross; script: Michael Dalton-Smith, Karen Gordon; executive producers: David Gross, Mark Kresser, Michael Dalton-Smith. **Release: March 2021.**

The Arctic: Our Last Great Wilderness (formerly America's Arctic)

Terra Mater Factual Studios; distributor: Cosmic Picture Distribution; directors: Myles Connolly, Florian Schulz; producers: Wolfgang Knöpfler, Walter Köhler; DP: Florian Schulz; script: Myles Connolly, Florian Schulz; score: Alex Heffes. **Release: Spring 2021.**

- Principal photography is complete, post-production is

under way.

Dino Dana: The Movie

Sinking Ship Entertainment; distributor: Sinking Ship Entertainment; director: J.J. Johnson; producers: Eric Beldowski, Blair Powers, Christin Simms, Matthew J.R. Bishop; DP: George Lajtai CSC; script: J.J. Johnson, Christin Simms; score: Michael-Paul Ella; executive producers: J.J. Johnson, Blair Powers, Christin Simms, Matthew J.R. Bishop. Cast: Michaela Luci, Saara Chaudry, Nicola Correia-Damude, Amish Patel. **2D. 30 minutes. Release: Spring 2021.**

- A shorter version is being prepared.
- The film will be screened at the GSCA's virtual conference in September.

Cool Cities (wt)

K2 Studios; distributor: K2 Studios; director: Nick Robinson; producer: David Gross; executive producers: Robert Kresser, Mark Kresser, Mark Krenzien, David Gross. Cast: Tim Jarvis. **Release: May 2021.**

Artemis: Beginning of a New Era (wt)

Afterglow Studios; distributor: tba; director: Luke Ployhar, producers: Luke Ployhar, Ashley Jahneke; script: Scott Pearson. **Release: mid-2021 to early 2022.**

- Production is on hold because of pandemic.
- May restart by the end of 2020.

Wings Over Water (formerly Wings 3D)

Dorsey Pictures, Archipelago Films; distributor: SK Films; directors, producers, script: Andrew Young, Susan Todd; DP: Andrew Young; executive producer: Chris Dorsey, Charlie S. Potter. **Release: Sept. 2021**

Einstein's Incredible Universe (wt)

Cosmic Picture; distributor: tba; director: Daniel Ferguson; producers: Taran Davies, George Duffield, Daniel Ferguson; script: Daniel Ferguson, Mose Richards; DP: Reed Smoot. **Release: Fall 2021.**

Refuge: America's Wildest Places*

America's National Wildlife Refuge System is dedicated to the preservation of wildlife species and the places they call home.

Tandem Stills + Motion; distributor: tba; director, producer: Ian Shive. **Release: Fall 2021.**

- Principal photography is complete, post-production is under way.

Formula E: Racing to the Future

Producer/distributor: tba; director, DP: Peter Chang. **Release: 2021.**

Journey to the Great Mayan Reef

Milbrand Cinema; distributor: tba; director, producer, DP: Lance Milbrand; editor: Dave Choice; score: Icarus Music. Cast: Kathleen Dudzinski, Eldon Bolton. **Release: 2021.**

- Principal photography is complete.

New England and the Sea of Stories (wt)

Cosmic Picture; distributor: Museum of Science, Boston; director: Daniel Ferguson; producer: Taran Davies; script: Daniel Ferguson; DP: Reed Smoot. **2D. Release: 2021.**

- Filming, originally planned to start in April, has been put on hold.

Yellowstone: Life in Extremes*

A celebration of the world's first national park on its 150th anniversary.

Grizzly Creek Films; distributor: tba; director: Thomas Winston. **Release: tba.**

Jul '21

Jan '22

July '22

CoolCi**Atremis****WOW
EIU
Refuge****NewEng
FormE
Yellows
JTTGMR
SharkHe****SOTS****FireFi RFTP**

- Filmed in Yellowstone in 2019 and 2020.
- Captured unprecedented aerials of the park with no humans during COVID shutdown.

Shark Heroes (wt)

Definition Films; distributor: K2 Studios; director, writer: Amelia McCarten; producer: David Gross; DP: Jonathan Shaw ACS; executive producer: Mark Kresser. Release: 2021.

Secrets of the Sea

Howard Hall Productions, Oceanic Research Group; distributor: tba; directors: Howard Hall, Jonathan Bird; producers: Michele Hall, Christine Bird; DPs: Howard Hall, Jonathan Bird; script: Howard Hall; score: Bruce Zimmerman, Alan Williams; executive producers: Michele Hall, Christine Bird. Release: Spring 2022.

- Principal photography is complete.
- Rough cut has been done.
- Release will be delayed to 2022.

Fire Fighters

Sean Casey Productions; distributor: tba; director, DP: Sean Casey. 2D. Release: 2022.

- Shooting in Southern California began last fall and continued through January.
- Will be filming this fire season with the added pressure of the coronavirus affecting the fire service community.

Racing for the Planet: The Ocean Race (wt)

Blue Sky Aerial & Specialist Filming; distributor: tba; director: tba; DP: Peter Degerfeldt. Release: December 2022.

- May 2020: Tests of 16K aerials.
- Fall: 16K filming will resume.
- **2022: The race starts.**

DMR FILMS:

Title	Dist	Release
Wonder Woman 1984	WB	10/2/20
Black Widow	WDP	11/6/20
No Time to Die	MGM	11/20/20
Eternals	Sony	2/12/21
F9	UP	4/2/21
A Quiet Place Part II	PAR	4/23/21
Shang-Chi	WDP	5/7/21
Jurassic World 3	UP	6/11/21
Venom: Let There Be...	Sony	6/25/21
Top Gun: Maverick	PAR	7/2/20
The Batman	WB	10/1/21
Spider-Man (untitled)	WDP	12/17/21
Mission: Impossible 7	PAR	11/19/21
Thor: Love and Thunder	WDP	2/11/22
Doctor Strange	WDP	3/25/22
Fast & Furious 10	UP	4/2/22
Indiana Jones (untitled)	WDP	7/29/22
Avatar 2	FOX	12/16/22



The orchestra recording the score for The Arctic: Our Last Great Wilderness at Synchron Stage in Vienna.

GS Filmmaking in the Time of COVID-19

by Myles Connolly

As we've pushed towards finishing *The Arctic: Our Last Great Wilderness* over the last few months, co-director **Florian Schulz** and I, along with the production team at **Terra Mater Factual Studios**, have faced challenges at three levels. First is filming anything on location; second has been editing the film with key team members scattered around the world and unable to travel; and third is the push to do all the work needed to produce the very best quality in sound, music, and 3D images.

An example of the first challenge was the fact that all of our planned Alaska filming for spring and summer of 2020 was first postponed and then cancelled by travel restrictions and lock-downs. The one exception was an adventurous opportunity co-director **Florian Schulz** took while flying into the back country with one of the local bush plane pilots. On the spur of the moment he realized he could get a cool aerial shot that would add some thrill-ride moments, and sure enough, his effort proved a success.

With the camera mounted inside the plane looking backwards from the cockpit, we see Florian's reaction as the plane races past encroaching mountain peaks and ridges. Seeing his giant grin is all we need

to know he's having a great time. The shot appears early in the film to help set the tone.

The second challenge proved a lot less fun and a lot more work. To edit the film and make the most of the team and talent available, Terra Mater brought in **Christian Stoppacher**, one of its lead film editors and a genius when it comes to wildlife projects. But Christian is in Vienna, I am in Los Angeles, and worst of all, Florian is in Alaska, a span of ten time zones! Getting everyone up and running for the edit required a lot of late nights and early mornings!

We were forced to do things a bit unconventionally and developed new workflows that allowed us to view the edits as Christian was working, post feedback along the timeline in Vimeo while he was sleeping, get his responses, and then review them the following day when we awoke. I had a standing call with Christian every morning at 5:30 California time to discuss what had come through and what our next steps would be. My eyes weren't always wide open that early in the



Myles Connolly

morning! But the end result speaks for itself and the film is definitely at the peak of its potential. A great team effort and a lot of commitment, well above and beyond the norm.

Some of the biggest challenges came when it was time to produce all of the final elements. A good example is the music, one of the key parts of any giant-screen film. Normally the composer, producers, director, and staff would all go to a massive studio where the orchestra would be assembled, and we'd spend two or three glorious days recording all the music tracks. From the beginning, composer **Alex Heffes** and I knew that this wasn't likely to be in the cards. With fantastic support from producer **Wolfgang Knoepfle** and the Terra Mater team in Vienna, we were able to coordinate and record the score remotely at **Synchron Stage** in Vienna.

The engineers created a recording environment so the musicians could be properly distanced from one another, miked exactly as they needed to be, and still cohesive enough to play together as an orchestra through the days of recording. For Alex and me here in California, these live recording sessions happened through the middle of the night, but they were



The Alaskan National Wildlife Refuge.

truly fantastic! I remember turning up the volume in my office, reclining in my chair with an adult beverage at hand, and listening to the glorious sounds coming at me from almost halfway across the globe in real time. My suggestions were only along the lines of “a little more cowbell,” but it was amazing to think that we have this capability, not just in theory but in practice. The process wasn’t easy, but everyone was excited by the challenges and determined to get the best result. I think we are all pleased and proud of what we achieved there.

Another part of the whole process that’s been interesting is color grading and converting the film to 3D with the team at **Onsight** in London. It was really fortunate that they’d helped us produce our promo for the **Giant Screen Cinema Association** meeting back in the spring, before lockdown occurred, because that gave Florian a chance to work closely with Onsight colorist **Andy Lee** to define the look of the film. Later on, that promo became our bible in terms of color and the feel of the film. Working remotely, Florian and his brother (and co-director) **Salomon Schulz** were able to view images at home, on color-calibrated monitors, and give Andy notes, confident that what they were seeing was what the end product would look like.

Onsight is also producing the 3D con-

version, working closely with their team in China. As you know, China has had its own challenges with COVID-19, so it was never perfectly clear when the artists would be allowed to leave their homes and go to work and when they would have to stay at home. Amazingly, the team found creative ways to make up for any slack and still produce astounding 3D images.

Back home in California, much to my wife Jeanette’s consternation, I’ve taken over the spare bedroom and installed a 4K 3D projector and 120-inch screen so I can view footage and feedback notes on a daily basis. It’s not the same as being in London or viewing on a giant screen but it’s surely the next best thing! Unfortunately, working across three continents and sixteen time zones takes its toll. At this point, it’s hard to know day from night or up from down. I’m awake at all hours, working with teams in London, Vienna, and Beijing, and trying to stay in touch with our partners in Alaska. I sometimes grab a catnap in the afternoon after Europe has



The control room at Synchron Stage in Vienna.

settled but before China is awake. Sundays are rest days and I’m making the most of them, you can be sure.

So, in closing, the global pandemic has forced us to do things differently. Sometimes we embrace new opportunities (my new 4K projector!), sometimes we loathe what we must do to make things work (“Sure, a conference call at 4 a.m. works for me....”), but I’m proud to say that everyone has risen to the challenge and the film is a standout. Our driving motivation is to produce the very best content so that theaters have something truly stunning for their audiences when they return. We’re all in this together and looking forward to the day when the lights go down and the giant screen comes alive for audiences all over the world.

The Arctic: Our Last Great Wilderness is being produced by Terra Mater Factual Studios and distributed by **Cosmic Picture Distribution**, with release set for spring 2021. For more information about the **Arctic National Wildlife Refuge** and efforts to protect it, visit ProtectTheArctic.org.

Myles Connolly is CEO of 360-Media and co-director, with Florian Schulz, of The Arctic: Our Last Great Wilderness. Over nearly three decades he has worked on 40 giant-screen films, including Everest, Flight of the Butterflies, Backyard Wilderness, and Cuba. He can be reached at contactmyles@yahoo.com.



Co-director Florian Schulz filmed over Alaska for The Arctic.

(from **IMAX** on page 3)

transport: how to move the huge 70mm frame 24 times each second, while making sure it was perfectly still as light was projected through it.

Conventional film projectors use a sprocket wheel or claw to engage the sprocket holes along the film's edges and pull the film through the projector gate with a start-and-stop motion. But the larger size of the IMAX frame (soon set at 15 perforations wide) meant that the film would have to be accelerated (and decelerated) much more rapidly than smaller formats, and the film stock was not strong enough to withstand those forces. The sprocket holes would rip through.

The team learned of a new system invented and patented by Australian inventor **Ron Jones**, and sent Kerr to Brisbane to obtain the rights. Jones' breakthrough was to move a loop of film in a wave-like fashion instead of pulling it in a straight line through the gate, dramatically reduc-

ing the force applied to the sprocket holes. The system was dubbed the "rolling loop." Jones agreed to sell the patent outright, pending a six-month evaluation period during which Shaw would see if the 35mm prototype Jones had built would scale up to 15/70.

Needless to say, Shaw was able to accomplish the task, but in the months leading up to the opening of the expo, it wasn't always clear that it would be possible, or that all the other parts would come together in time. Kerr was busy raising money, and Ferguson, the "extra" filmmaker, was assigned to help Kerr and Shaw with their respective tasks. Ferguson admits he was bad at the fundraising, but loved being Shaw's "gofer" and helping him build the first IMAX projector.

The projector was developed at McMaster University in Hamilton, ON, which allowed local inventors to use its shop facilities. Shaw used a massive 25,000-watt, water-cooled solar simulator lamp as the light source for the new machine. (Later production model projectors used 15,000-watt lamps.) He hoped that Jones' rolling loop would scale up to 15/70, but his early prototypes still shredded the film when he increased the speed to 24 frames per second.

Meanwhile, Britain was shooting *Tiger Child* at locations around the world, and in the spring of 1969, Kroitor took his wife and five children to Japan to edit the movie, which would be a complex mix of 35mm, 5/70, and 15/70 footage. He commissioned a special editing machine that would

allow him to preview the placement of images within the large frame, and then sent detailed shot lists and specifications to **MGM** in Hollywood, where the optical printing would be done. However, with no projector, he had no way to view the 15/70 footage that came back.

The team had always had a backup plan in case the projector wasn't ready in time: they would use three standard 5/70 projectors turned sideways. But that would require three separate prints, and as the decision day for that option approached, the machine still wasn't working. Shaw needed another US\$100,000. Kerr asked Kroitor to ask Fuji to lend them the funds, which Fuji did, accepting the unfinished projector as collateral.

In a sign of how uncertain he was of the success of the entire venture, Kroitor had bought return airline tickets for his family, so they could get home to Canada if things didn't go well. He told *LFX* in 2002 that "every so often, I would go to the drawer in our house where the return tickets were, just to make sure they were still there."

Diane Disse wrote in the 1980s that "Kerr reports each of them was discouraged at times, but 'I guess what saved us was we weren't all discouraged at the same time.' Shaw admits to being discouraged 'maybe once a week' at first, but then he'd go to sleep and wake up ready to try a new idea."

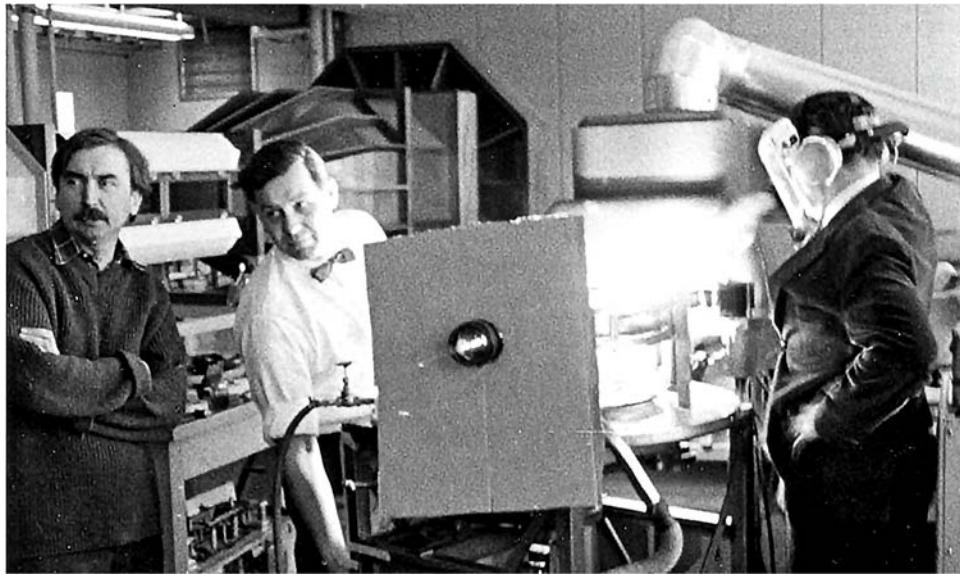
Ultimately, with very little time left, Shaw made a breakthrough improvement, and at 1:30 am on a Sunday morning in June, the prototype ran at 24 fps without damaging the film. Shaw noted the momentous event with a brief note in his ubiquitous Daytimer datebook. (See *LF Examiner*, Summer 2019.)

Shortly after, representatives of the expo visited Canada to see the projector working, and were shown a shot of a rhinoceros, filmed with Jacobsen's camera and projected on the wall of the McMaster shop. Kroitor recalls that although the representative arrived "green with fear" that the system wouldn't work, when he saw the rhino running toward him, "he was all smiles."

Kroitor finished the film in the full-



Slides were projected on the sides of the interior of the Fuji Pavilion.



L to r: Roman Kroitor, Bill Shaw, and Robert Kerr working on the prototype IMAX projector.

frame 15/70 mode, construction of the pavilion was completed, and the projector was installed. As he had done with *Labyrinth*, he used six channels of audio, and mixed the soundtrack in the theater.

The theater opened on time with the expo on March 15, 1970, and continued running until Sept. 13, during which time it broke down only once.

Aftermath

Typically in stories like this, after overcoming all sorts of obstacles and meeting deadlines at the last minute, the protagonists are met with instant and universal acclaim and success. However, that's not quite how the IMAX story turned out.

The Fuji Pavilion was one of the most popular at the fair, running at full capacity most of the time. Although many were very impressed with the whole presentation, Kroitor recalls that some Expo visitors were baffled by *Tiger Child*, as many viewers have been since then. It is not a terribly accessible film, thanks to its non-linear nature, and it was only part of a larger presentation that included the slides on the walls. The meaning of the overall experience was not obvious to all.

Nor was the theater quite what the founders had originally intended. The screen was not as large as later IMAX screens would be, and the audience stood for nearly 20 minutes on a flat rotating

turntable, rather than being seated facing the screen.

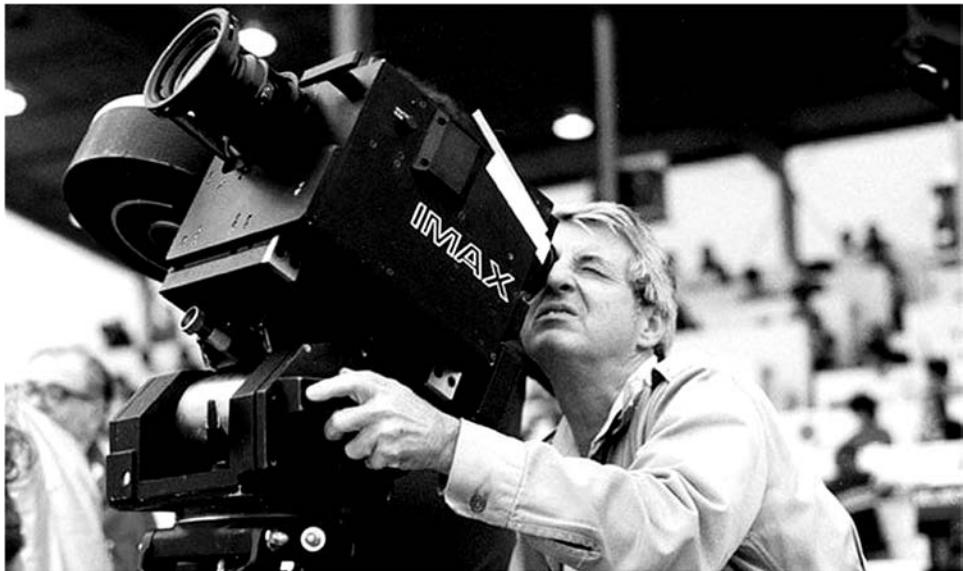
But perhaps the most significant obstacle to the appreciation and acclaim this new invention deserved was the remote location and fleeting nature of the expo. Ferguson and Kroitor hoped to sell the system to Hollywood, but few if any influential studio execs came to Osaka. What they needed was a permanent installation in a more accessible location.

That soon came in the form of **Ontario Place**, a theme park opened in Toronto in 1971 by the provincial government. The

Osaka projector was moved there and installed in the Cinesphere, a 122-foot (37-meter) geodesic dome with a 60x80-foot (14x24-meter) flat screen, and about 800 seats arranged on a raked deck so that every viewer had an unobstructed view. With a few refinements, that basic design would become the standard for most of the 265 other IMAX film theaters built over the next 41 years. Although it was upgraded several times over the years, components of that original IMAX projector were still being used at Ontario Place until February 2012, when the park and the theater were temporarily closed. When they reopened in November 2017, the theater was equipped with a new 15/70 GT3D projector, fittingly making it the site of both the first and last installations of an IMAX film projector. The theater will celebrate its 50th anniversary in May 2021.

Ferguson directed **North of Superior** for the theater, shooting with Jacobsen's camera, as improved by Shaw. Because there was no money for optical work, *North of Superior* completely eschews the multi-image format in favor of full-frame 15/70 footage. This forced Ferguson to explore the medium we now know as the giant screen. In so doing he discovered and invented many of the techniques that would later become standard practice in shooting large-format films.

(see **IMAX** on page 16)



Imax co-founder Graeme Ferguson filming a Space Shuttle launch for *Hail Columbia* in 1981.

Premiering This Summer

Tenet

Produced by **Syncopy**, distributed by **Warner Bros.** Directed and written by **Christopher Nolan**, produced by Christopher Nolan and **Emma Thomas**, photographed by **Hoyte Van Hoytema**, scored by **Ludwig Göransson**. Executive producer: **Thomas Hayslip**. Cast: **John David Washington, Michael Caine, Kenneth Branagh, Robert Pattinson**. 2D. Release: Aug. 26 (internationally), Sept. 3 (U.S.)

"John David Washington is the new protagonist in Christopher Nolan's original sci-fi action spectacle *Tenet*. Armed with only one word — *Tenet* — and fighting for the survival of the entire world, the protagonist journeys through a

twilight world of international espionage on a mission that will unfold in something beyond real time. Not time travel. Inver-

sion. Nolan wrote and directed the film, using a mixture of 15/70 and 5/70mm film to bring the story to the screen."



Director Christopher Nolan crashed a real 747 for a sequence in *Tenet*.

(from **IMAX** on page 15)

At about this time the founders began to feel that although "Multivision" was an appropriate name for the projection system — they still expected most of their films to be multi-image, like *Tiger Child* — the name "Multiscreen" for the company was a misnomer. Over dinner at a Hungarian restaurant in Montreal they coined the name IMAX from the words "image" and "maximum." (Ferguson still has the stained placemat on which they scribbled some of the proposed names.)

With its new name, and with the success of *North of Superior*, the small company set out to spread its new experience across the world. Although it was slow going at first, the success and popularity of two early museum clients — the **Reuben H. Fleet Space Theater** in San Diego and the **National Air and Space Museum** in Washington, D.C. — led to IMAX's wide acceptance and relatively rapid growth among other high-profile museums worldwide. Within 25 years there would be 142 institutional IMAX theaters operating, comprising nearly two-thirds of the world total. In the same period, over 150 films were produced by Imax and other producers, the vast majority of them documentary-style productions running 45 minutes or less.

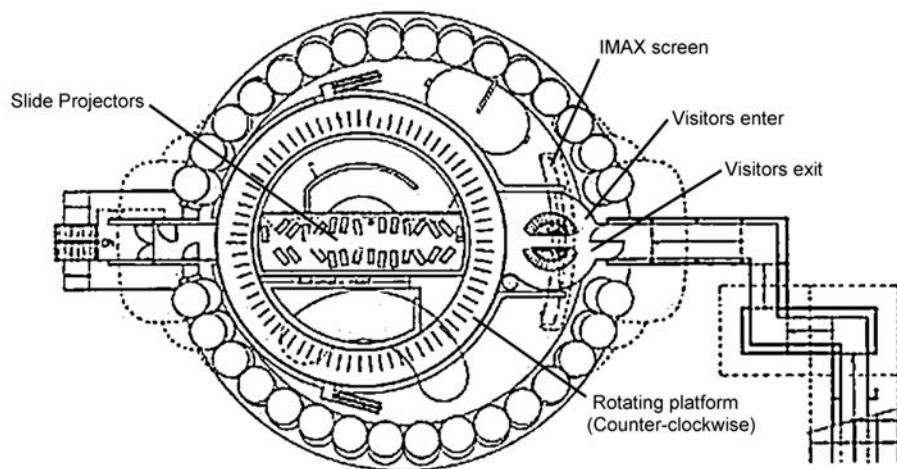
The founders sold **Imax Corporation** to

its current management in 1995, and shortly afterward IMAX theaters were being installed in multiplexes, a larger market with much greater growth potential than the nearly saturated museum segment.

In 2000, with Disney's *Fantasia/2000*, Hollywood films began to appear on IMAX screens, and in 2002 Imax introduced its DMR process, which digitally enhanced and up-resed 35mm features to the 15/70 format. Since the first DMR title, a re-release of 1995's *Apollo 13*, more than 300 Hollywood movies have been shown on IMAX screens, of which 86 were printed to 15/70 film. The latest

of these, **Christopher Nolan's *Tenet***, is nominally set for release in July, and as many as 40 15/70 film prints were expected to be made for the release, although those plans are obviously in flux at the moment.

Imax introduced its first digital projection system in 2008, its first laser system in 2015, and launched commercial laser and dome laser systems in mid-2018. In the 12 years since the first IMAX digital installations, the number of IMAX screens in multiplexes has exploded from 179 to 1,526, while the count of institutional and commercial standalone IMAX theaters has dropped 21%, from 124 to 99.



Visitors to the Fuji Pavilion watched *Tiger Child* while standing on a rotating platform

Bookings: Summer 2020 by Film

137 bookings of 66 films in 58 theaters

Summer 2020 by Theater

Theater	Film	Open	Close	Theater	Film	Open	Close	Theater	Film	Open	Close
Al Khobar	JTM	8/11/20		Hampton VASC	BackWild	7/11/20		Saint Louis SC	SupDogs	7/23/20	
	JTS	8/11/20			IAW	7/11/20			NPA	6/27/20	
	OOBP	8/11/20		Hangzhou LCSTM	AMMM	7/22/20			GBRF	6/26/20	
Bangkok Par Maj	Tenet	8/26/20			HumpbWha	7/22/20		Salt Lake City Clark	Saint Augustine	6/26/20	
	A11FSE	6/19/20		Hartberg	NPA	6/11/20			Volcanoes	6/26/20	
	AMJ	6/19/20			SOB3D	6/11/20			A11FSE	6/18/20	
Boston NEA	DreamBig	6/19/20		Hastings	BFTB	7/14/20		Shanghai Dome STM	BackWild	6/18/20	
	BackWild	8/1/20		Hutchinson	A11FSE	5/22/20			GBRF	6/18/20	
	GWS	8/1/20			AncCaves	5/22/20			DOA	6/15/20	
Branson	SeaLion	8/1/20		Indianapolis Imx	IOLM	6/26/20		San Simeon DCI	SOTU	6/15/20	
	Ozarks	7/1/20			MIF	7/27/20			Volcanoes	6/15/20	
	ExtreWeat	7/1/20		Kansas City Sci	SupDogs	6/26/20			HCBTD	7/21/20	
Calgary TS	GBRF	7/1/20			DinoAliv	7/3/20		Shanghai 3D STM	AMJ	7/21/20	
	Pandas	7/1/20		Kapurthalala	NPA	7/3/20			SpacJunk	7/21/20	
	SupDogs	7/1/20		KSC 1	JTS	7/6/20			UnderSea	7/21/20	
Charleston CCAS	WildAfri	7/23/20		Lehi	MA	7/23/20		Shanghai Dome STM	AMJ	7/21/20	
	GBR3D	7/17/20			SeaMonst	7/23/20			OOBP	7/21/20	
	SupDogs	7/17/20			TOTIA	7/23/20			SpacJunk	7/21/20	
Chicago MSI	TurtOdys	7/17/20		London BFI Ode	Tenet	8/26/20		Shreveport	UnderSea	7/21/20	
	GBRF	8/1/20		Louisville KSC	TurtOdys	7/25/20			BTBW	6/24/20	
	SOTU	8/1/20		Lubbock SS	BFTB	7/23/20			SupDogs	6/24/20	
Cincinnati MC	SupDogs	8/1/20			DOA	7/23/20		Sinsheim	DS3D	6/12/20	
	A11FSE	7/17/20			GBRF	7/23/20			Hubble	6/11/20	
	SupDogs	7/17/20		McMinnville	FightPil	7/15/20			PlanPowe	6/11/20	
Cleveland	BFTB	7/1/20			LOF	7/15/20		Sioux Falls	WildAmer	6/11/20	
	GBRF	7/1/20			Rescue	7/15/20			IAW	6/22/20	
	ACGOTS	7/23/20		Memphis Pink	DOA	7/21/20			MOTUW	6/22/20	
Corpus Christi Lex	D-Day	7/26/20			SupDogs	7/21/20		Speyer Dome	A11FSE	6/12/20	
	FightPil	7/26/20		Mobile	DinoAliv	6/2/20			Dolphins	6/12/20	
	SpacJunk	7/26/20			HiddPac	6/2/20			Jerusale	6/12/20	
Denver MNS	AmazAadv	7/13/20			IncrPred	6/2/20		Taichung NMNS	JTSP	6/12/20	
	HiddPac	7/13/20		Montreal SC	GBRF	7/16/20			MOF	6/12/20	
	IAW	7/13/20			SupDogs	7/16/20			BackWild	7/11/19	
Edmonton TWS	AGWN	7/8/20		Niagara Can DCI	Niagara	7/23/20		Vancouver TWS	Volcanoes	1/1/20	
	BTBW	7/8/20		Omaha Zoo	SupDogs	6/29/20			A11FSE	8/1/20	
	HumpbWha	7/8/20			TurtOdys	6/29/20			IAW	8/1/20	
Galveston	WildAfri	7/8/20		Orlando SC	A11FSE	6/15/20		Victoria DCI	SupDogs	8/1/20	
	WWDP3D	7/8/20			Volcanoes	6/15/20			1917	8/14/20	
	AncCaves	5/23/20			CongQOTS	6/22/20			GBRF	7/3/20	
Hague	ExpChesa	5/23/20		Oulu	HiddPac	7/1/20		Wichita EP	MIF	7/3/20	
	Cuba	7/1/20		Peoria RM	IAW	7/1/20			SeaLion	7/3/20	
	GBRF	7/1/20		Pittsburgh CSC	HumpbWha	6/29/20			TurtOdys	7/3/20	
	Mummies	7/1/20			NPA	6/29/20		Yellowstone	GBRF	7/1/20	
	NPA	7/1/20		Regina	GBRF	7/23/20			MOS	5/22/20	
	OOBP	7/1/20			IAW	7/23/20			Yell	5/22/20	
	TurtOdys	7/1/20									

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SHORTS

Tenet opens in 15/70 on 8 screens

As this issue went to press in the last full week of August, **Imax Corporation** had just posted a list of eight theaters that will run 15/70 film prints of **Christopher Nolan's** long-awaited sci-fi action film *Tenet*. They are:

Cineplex Cinemas Mississauga, Canada
Saskatchewan Science Centre, Regina, Canada

Ontario Place, Toronto, Canada

KrungSri IMAX Paragon CinePlex, Bangkok, Thailand

British Film Institute, London, UK

Michigan Science Center, Detroit, MI

Museum of Discovery and Science, Fort Lauderdale, FL

Indiana State Museum, Indianapolis

Although not officially confirmed at press time, the following locations will also get prints:

IMAX Theatre Melbourne, Australia

Esquire IMAX, Sacramento, CA

Sources tell *LFX* that only thirteen 15/70 film prints of *Tenet* will be released worldwide, a much smaller count than the 37 that were struck for Nolan's last film, *Dunkirk* in 2017. (Before the pandemic, Imax officials had said they planned to make about the same number available for *Tenet*.) In addition, 26 5/70 prints will be screened in the U.S. and Canada, with at least another 25 overseas, according to in70mm.com.

Reportedly, London, Bangkok, and Melbourne will be the only international 15/70 bookings.

The other likely 15/70 sites are New York City's **AMC Lincoln Square 13**, the **AMC Universal CityWalk** in Los Angeles and **AMC Metreon** in San Francisco, as witnessed by the fact that Imax Corp. has recently posted job openings for film projectionists at the California theaters. But the governments of California and New York have not announced when movie theaters will be allowed to reopen, so those locations will probably not open day-and-date. Likewise, *Tenet* may not open in Melbourne until early October.

Release dates for the movie, which was filmed entirely on 15/65 and 5/65 film, were only fixed a few weeks before the first openings: Aug. 26 and 27 for most international locations (including Canada), Sept. 3 for the U.S. and Russia, and Sept. 4 for China. Japan will have to wait until Sept. 18. In the U.S., select "large-format and premium theaters" will have preview screenings starting on Aug. 31, three days before the wide opening, according to an Aug. 21 announcement from **Warner Bros.**



Tenet stars John David Washington

Pushed back several times from its original July 17 date, *Tenet* is acting as a trailblazer for new feature releases as cinemas continue to reopen around the world after being closed by the pandemic since the first quarter of the year. With almost no new content available, those that have reopened in the past few months have mostly shown repertory titles, in many cases including previous Nolan blockbusters such as *Interstellar*, *Inception*, and the *Dark Knight* trilogy.

D3D launches StreamKit

D3D Cinema has released **StreamKit**, a "suite of digital streaming solutions," according to a press release. The system, available in three modules, allows theaters to stream live or recorded material for a variety of purposes: overflow rooms for live meetings, live science demonstrations

to classrooms or the general public, town hall meetings, etc. D3D provides the hardware and software needed for the basic packages, but can also customize the system for each client's specific needs.

According to D3D's **Derek Threinen**, "The use of StreamKit is not limited to existing D3D installations, nor is it even a requirement for an institution to have an existing giant-screen, giant-dome or other immersive cinema. StreamKit was created for institutional clients large and small to provide a powerful, cost-effective, and easy-to-use solution to broadcast live and recorded events to their online communities." For more information, visit d3dcinema.com.

GSF to re-release *Dinosaurs*

Dinosaurs of Antarctica from **Giant Screen Films**, will be relaunched in February 2021, one year after its initial premiere, which was cut short by the coronavirus. According to a press release, more than 80 theaters have signed on to the new release window.

The film opened in about a dozen GSF theaters in February 2020, but all had closed by the end of March.

In Saturn's Rings to be streamed

The producer of **In Saturn's Rings** will stream the film in its entirety, along with a special introduction and live Q&A with the filmmakers, on Sept. 15 and Sept. 19. For \$15, viewers can stream the presentation in a 48-hour window, via the secure streaming service **Eventive**.

Director, producer, and writer **Stephen van Vuuren** explains that "as the pandemic has kept on, we've been looking at options that would allow us to share the film without risking alienating the theaters that have supported the film, that would honor our contract with the film's distributor and prevent easy piracy."

Sept. 15 is the third anniversary of the Cassini spacecraft's plunge into Saturn's atmosphere, ending its seven-year mission of exploration.

For more information and tickets, visit insaturnsrings.com.